= 17.80) were statistically significant. For the least desirable heath state (NV), TIME*METHOD interaction was also significant indicating the two factors were not independent of each other, $F(5,65) = 7.51$. These results showed individuals rated the same health state as less desirable (lower rating) for longer time horizons and the preference elicitation method used made a difference. Furthermore, not only were health states not "timeless", but preference reversal also occurred resulting in fates perceived as worse than death. **CONCLUSIONS:** For the majority of respondents the utility independence assumption with respect to time for SG and VAS methods did not hold. Similar to Bala et al. (1999) and Franic et al. (2003) the results of this study indicated preference weights as measured by SG and VAS techniques were not "timeless". Regardless of the preference measure used: both SG and VAS yield higher scores for shorter time horizons.

CANCER

CANCER—Health Policy Studies

PCN27

THE BREAST CANCER SCREENING RATES OF GEORGIA MEDICAID RECIPIENTS

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OBJECTIVES: The primary objective was to evaluate the performance of the Georgia Medicaid program for breast cancer screening by comparing the GA Medicaid breast cancer-screening rate to the national benchmarks. The second objective was to identify patient and provider characteristics associated with the mammography use. **METHODS:** The study was a retrospective cohort study. The Health plan Employer Data and Information Set (HEDIS) criteria were used to measure the breast cancer screening rate for women aged 52 to 69. The 1999–2000 GA Medicaid administrative claim data, which included the eligibility files patient link to the outpatient claims, were used. The measurement year was 2000 and the 1999–2000 outpatient claims were searched for mammography claims (ICD9 = V76.11 V76.12 CPT = 76090–76092). This rate was compared with the National Committee for Quality Assurance (NCQA) breast cancer-screening rates. Univariate and logistic analyses were used to identify patient (physician visit level) and provider (physician specialty and geographic location) characteristics associated with breast cancer-screening rate. **RESULTS:** A total of 35,775 women aged 52–69 with two years continuous GA Medicaid eligibility were identified. Nearly half (45.7%) of the subjects in the cohort were African-American. Overall, 10,391 (29.1%) had at least one mammography during the study period. This rate is much lower than the national Medicaid median (55.6%) and the national commercial median (74.8%) rates. Women aged 65 years or older had a lower breast cancer-screening rate as compared with women under 65 (22.2% compared with 31.5%). African-American women had mammography much less often than caucasian women (18.1% compared with 53.4%). The results of the logistic models predicting mammography use for caucasian and African-American women will be reported. **CONCLUSIONS:** The GA Medicaid program breast cancer screening rates were much lower than the national rates, particularly for black women. Strategies to increase mammography use for indigent women residing in GA should be sought.

CANCER

CANCER—Methods

PCN28

GAPS IN COLORECTAL CANCER OUTCOMES RESEARCH

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OBJECTIVES: The importance of cancer outcomes research has been well recognized. The purpose of this study was to examine the current status of, and identify gaps in, colorectal cancer outcomes research. **METHODS:** Colorectal cancer outcomes research articles published from 1999 to 2003 were retrieved using a Medline search with keywords of "colorectal neoplasms or colorectal cancer" and the following Medical Subject Heading (MeSH): Economics, Cost and Cost Analysis, Survival, Quality of life, Personal Satisfaction, Satisfaction, Mental Health, Outcome Assessment (health care), Health Service Accessibility, Health Service Research, Quality of Health Care, Quality Assurance (health care), Quality Indicators (health care), Practice Guideline, and Decision Making. The literature was limited to the English language and human subjects. Articles excluded were biological or pathological studies, clinical trials or reviews mainly answering efficacy-related questions, letters, comments and editorials. The abstracts were reviewed and classified by study designs, study endpoints and study impact levels (1) adds to the knowledge base only; 2) affects practice polices; 3) influences the delivery of care; 4) leads to changes in health outcomes, as proposed by the Agency for Health care Research and Quality)). Full-text articles were retrieved as needed for classification. **RESULTS:** A total of 3255 articles were retrieved by the search, and 525 met the inclusion criteria for the analysis. Most were retrospective cohort studies (216, 41.1%). The most common endpoints were survival (371, 70.6%), followed by quality of life (102, 19.4%), economic cost (81, 15.4%), and satisfaction (17, 3.2%). A total of 481 articles (91.6%) were in level 1, 26 (5%) in level 2, 16 (3%) in level 3, and 2 (0.4%) in level 4. **CONCLUSIONS:** Most colorectal cancer outcomes studies published in the last five years were focused on survival and represented impact level 1 research. Satisfaction was almost ignored and hardly investigated. Outcomes research answering more than survival questions and representing higher impact levels is warranted.

PCN29

MEASURING CHEMOTHERAPY EFFECTIVENESS IN NATURALISTIC SETTINGS: THE THREE FACES OF RELATIVE DOSE INTENSITY

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OBJECTIVES: In research on the effectiveness of chemotherapy, a key measure of treatment delivery is average relative dose intensity (ARDI), which summarizes delivered dosage per unit of time, relative to an accepted standard. In clinical trials, where dosages and timing are strictly controlled, the calculation and use of ARDI are well-understood. In actual practice, however, naturally-occurring events complicate the computation and interpretation of this statistic: dosage levels can be reduced, treatment cycles can be delayed or eliminated entirely, and the prescribed regimen can differ materially from the published standard. In recent naturalistic research studies and clinical performance improvement programs, various alternative methods of calculating ARDI have been presented, and have been given

a variety of interpretations. The objectives of this paper are to critically evaluate the alternatives and present a set of statistics with known psychometric properties and unambiguous interpretation. **METHODS:** Data from several cancer registries and retrospective studies were mined to identify and categorize the various naturally-occurring scenarios impacting ARDI. **RESULTS:** Three statistics were derived from these samples, which discriminate among three key ARDI aspects, labeled "planned ARDI", "delivered ARDI" and "% Optimal Dose". They measure, respectively, the physician's prescribed dose intensity, the actual delivered dose intensity, and the total delivered dose independent of time, all relative to the associated standard. Several visualization and analysis techniques are also presented that employ these measures to determine the relative contribution of the various fundamental causes of suboptimal dose administration. These causes include cycle delay, dose reduction, treatment attenuation and planned deviation. **CONCLUSIONS:** The methods presented provide those engaged in naturalistic research and clinical performance improvement with a validated set of statistics and a concise, unambiguous terminology to measure and interpret the complex treatments involved in the study of chemotherapy effectiveness.

PCN30

USING THE DIFFERENCE IN DIFFERENCE METHOD TO UNDERSTAND OUTCOMES IN PROSTATE CANCER

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OBJECTIVES: The "difference in difference" method (DD) is commonly used in health policy-oriented research. However, it is seldom used to design and analyze cohort outcomes studies. We applied the DD method to assess an independent association between androgen deprivation therapy (ADT) and bone complications among non-metastatic prostate cancer patients receiving ADT. **METHODS:** Using medical claims data from a 5% national random sample of Medicare beneficiaries, prostate cancer patients who initiated ADT in 1992–94 without bone metastasis at baseline were identified (the "ADT" group, N = 3887). Prostate cancer patients without ADT matched on a 1:2 ratio on the basis of age, race and Charlson comorbidity index constituted the "comparison" group (N = 7774), a group similar to the ADT group but unaffected by ADT. We analyzed seven subsequent years of inpatient, outpatient, and physician claims data to identify rates of bone complications (e.g., fractures, osteoporosis/osteopenia) conditional on patient survival. **RESULTS:** Fracture incidence rates for the initial baseline two years and 7 years respectively (conditional on survival) were 11.3% and 83.3% for the ADT group versus 10.4% and 56.3% for the comparison group. As the temporal effect from the comparison group may reflect change that would have occurred in the absence of ADT over time due to aging and disease progression, we subtracted the change (56.3% – 10.4%) for the comparison group from the corresponding change (83.3% – 11.3%) for the treatment group, in an effort to account for the unmeasured time effects. Thus, the difference in difference (DD) estimate, 26-percentage point change (72% – 45.9%), reflects the association of ADT with fracture. **CONCLUSION:** This estimate will be valid if the time varying factors (e.g., disease progression) are consistent or equivalent in treatment and comparison groups. Future research using clinically detailed data should assess whether such time-varying factors are different between those undergoing ADT and those not.

PCN31

WEIGHT OR NOT TO WEIGHT?

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OBJECTIVES: Methods from the traditional survival analysis are not directly applicable to estimate medical costs since patients accumulate costs with different rate functions over time, leading to negatively biased estimates. A number of authors have incorporated inverse probability weightiness (IPW) technique to correct for this bias. None of these authors, however, compare their result with the method, which supposedly yields bias estimates, i.e. OLS over uncensored observations. In this paper, we test the differences between the coefficient estimates of OLS over uncensored observations and that of proposed model to determine whether using weight yields statistically different results. Moreover, we compare the estimation power of the proposed alternative models. **METHODS:** A Hausman kind of test is proposed to compare the weighted estimator and unweighted estimators. Predictive Power tests are used to choose between alternative models. **RESULTS:** Our data set consists of an inception cohort of 773 patients with incident cases of prostate, colon, lung and breast cancer from 24 Michigan community hospitals and their affiliated oncology units between the years 1994–1997. Hausman test indicated the results are statistically different. Predictive Power tests yield that Lin [2003] model is better than Lin[2000], Carrides et al. [2000] and Bang and Tsiatis [2000]. **CONCLUSION:** Two conclusions are as follows: 1. If the error terms are homoskedastic and we fail to reject Hausman test use unweighted simple OLS over complete observations. 2. Otherwise, weighted estimators yield consistent results and predictive power tests can be used to choose among them.

PCN32

CENSORED MEDICAL COST ESTIMATION

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OBJECTIVES: To propose a method to estimate total medical cost from censored data. **METHODS:** In this paper, the inverse probability of weighted (IPW) least squares method is used to assess the effect of covariates (e.g. patient and clinical characteristics) on medical cost with censored data. We outlined IPW least squares as applied to censored medical cost data, including the statistical properties of the estimation, then introduced Hausman type of test to compare the estimators calculated by using IPW least squares and OLS over uncensored data and applied our method to the estimation of cancer costs **RESULTS:** Medicare claim files are examined to apply our method. Each patient is followed two years after diagnosis of cancer (breast, colon, prostate or lung). For patients who have less than two years of cost and still alive at the end of the study were considered censored. The reference group fro treatment modalities is surgery plus adjuvant therapies, the reference group for site of cancer is lung. Variables that reach statistical significance ($p < 0.05$) include physical function, type of cancer (except colon), surgery and radiation, radiation only, and chemotherapy and radiation. Ten additional points in patient's prior physical function score decreases total medical cost by 0.7 percent. Prostate cancer patients and breast cancer patients cost 1.36 and 2.46 times lower than lung cancer patients respectively, these estimates are 1.16 times and 2.40 times according to IPW least square estimation. **CONCLUSIONS:** Hausman test suggests that IPW estimates are significantly different ($p < 0.05$) and suggested